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IMPLEMENTATION OF LEAN CONSTRUCTION CONCEPT AMONG CONTRACTORS IN MALAYSIA

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ABSTRACT

Malaysian construction industry is growing rapidly at the moment. In conjunction of this expanding, fresh and innovative methods have been introduced to enhance the management of the project. Lean construction as discussed and debated by previous researchers is measured as a theory or approach that needs to be introduced within the construction industry, especially to increase the sector's productivity level through the taking away of activities and actions deemed as being wastage in the construction procedure or process. The objectives of this research are to summarize the lean construction concept in a comprehensible model, to assess the awareness of the lean construction concept among local contractors and finally to identify the potential barriers of implementing the lean construction in Malaysia. At the end of the study, the result gained are the beneficial information on the awareness of the industrial players especially contractors and designers regarding the concept of lean construction as well as the level of it implementation in the Malaysian construction industry.

Keywords: Lean Construction, Implementation of Lean Construction, Potential Barrier, Construction Industry.

INTRODUCTION

The introduction or ideas of the lean construction concept are introduced in the early 1990's as a direct adoption of the lean manufacturing concept. Lean construction is one of the new philosophies that have been implemented by Toyota in their manufacturing process which now applied to the construction industry in order to smoothen the construction project and increase the contractor's profit by eliminating waste. It has resulted in an innovation of sorts within the construction industry. The implementation of the concept will caused a positive effect through time and enhances the management process of the projects. Throughout the concept, the waste elimination and value enhancement in a construction project were defined. This approach is seen as being able to make a process of implementing activities in the project in a systematic, organize and effective. By the introduction of this concept, it will then forcibly alter and change the traditional work practices, which is normally

undertaken by the construction firms according to the needs and suitability in line with the objectives and principles established in the lean construction concept itself (Ballard and Howell, 2003).

DATA COLLECTION PROCESS

Set of questionnaires are distributed to the selected contractors, consultants and Government Agency. The scopes of this study are the Class A and B contractors, consultants and government agency in Malaysia. All questionnaires are standard, to ease the data analysis and also to set a standard response from the respondent. 300 questionnaires are sent out to the respondents. To ease the response of the selected respondent, a self-addressed stamped envelope is provided along with the questionnaire.

RESULT AND DISCUSSION

From literature study, the main lean construction concepts and principles are critically studied and can be summarised as LCC and LCP[7] Models in Figure 1 and 2, respectively.

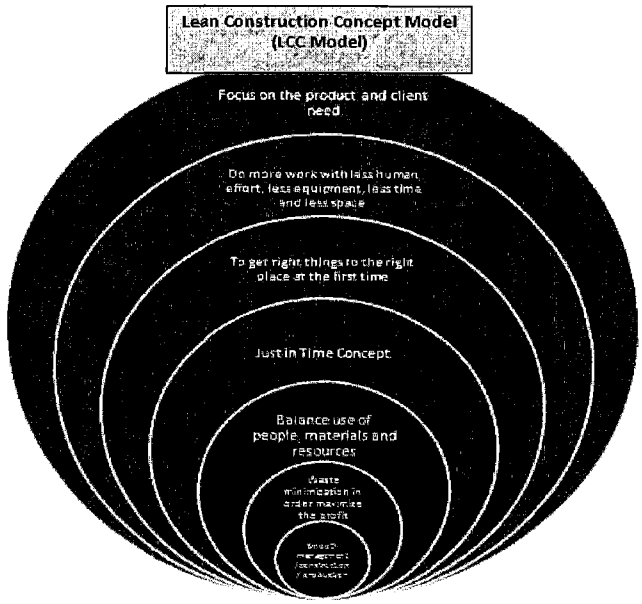


FIGURE 1 Lean Construction Concept Model (LCC Model)

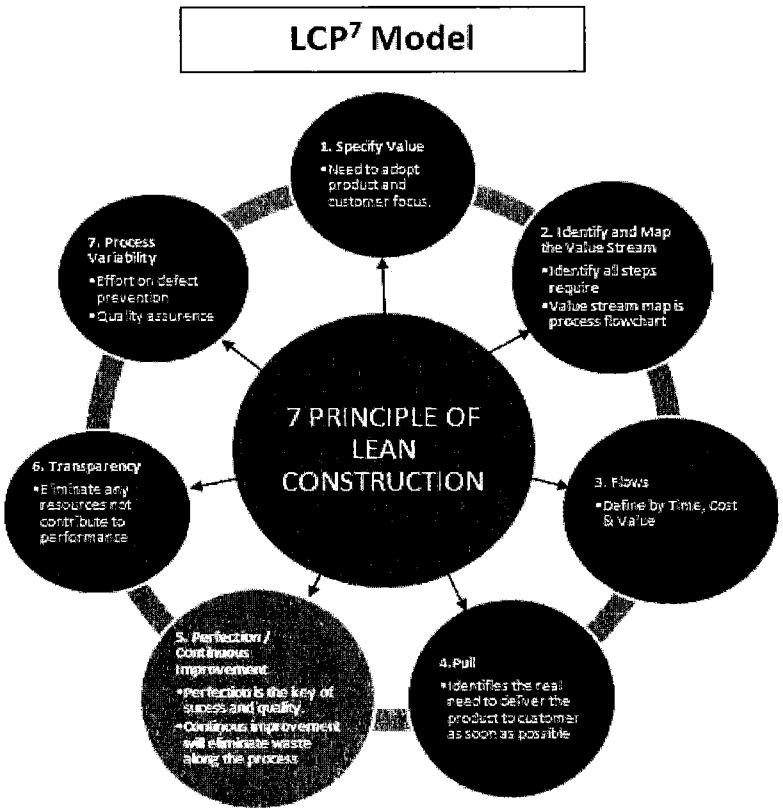
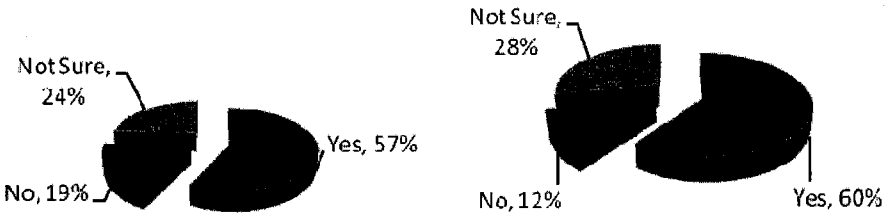
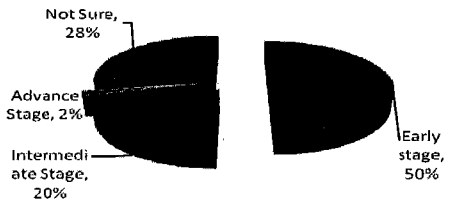


FIGURE 2 Lean Construction Principle Model (LCP[7])

According to the response gained from the questionnaires, majority of the respondents are aware of implementation of the Lean Construction Concept and the result is as shown in Figure 3(a). The respondents' awareness reflects similarly to the perception on implementation of lean construction in local industry, as shown in Figure 3(b). However, based on the survey, half of the respondents believe that the implementation is still at early stage, as shown in Figure3(c).



(a) (b)



(c)

FIGURE 3 Lean Construction Implementation: (a) Awareness, (b) Perception, (c) Level of application

The reasons behind the average implementation of lean construction are thoroughly studied and Table 1 and 2 show the summary of the ranked barrier at management and design stage, respectively.

TABLE 1 Ranked Barrier in Management Stage

Potential Barrier	N	Mean	Rank
Lack of customer / client focus	108	3.35	5
Lack of training	108	3.41	2
Fragmentation of profession	108	3.40	4
Absence of long term planning	108	3.46	1
Ineffective management practice	108	3.41	3

TABLE 2 Ranked Barriers in Design Stage

Potential Barrier	N	Mean	Rank
Quality assessment focus on conformance	108	3.41	1
Fragmentation of profession	108	3.36	2
Fragmentation of supply chain	108	3.36	3
Wait and see attitude	108	3.34	4
Ineffective Management	108	3.33	5
Absence of planning	108	3.27	6

CONCLUSION

In conclusion, in order to simplify the definition of lean construction, LCC and LCP[7] models have been developed. While based on conducted survey, majority of the respondents are aware of this concept. Besides that, majority of the respondents are also agreed that the lean construction is being implemented in Malaysia. Half of the respondents also agreed that the concepts are implemented at early stage. This is because lean construction is a new concept implemented in the industry. Lastly, lack of customer/client focus and quality assessment focus on conformance have been identified as the main barriers in implementing lean construction at management and design stages, respectively.

REFERENCES

Abd. Ghani. (2006). *The Importance of Preliminaries Item.* Masters Degree, Universiti Teknologi Malaysia, Skudai.

Atkin, B. and Pothecary, E. (1994). *Building Futures.* University of Reading, UK.

Ballard, G. and Howell, G. (2003) 'Lean project management', *Building Research & Information,* 31(2), pp. 119-133, [Online]. Available at: http://taylorandfrancis.metapress.com/ (Accessed: 13 July 2011).

Ibrahim M.M. and Ong C.K. (2003) Reviewing the Potential of Applying Lean Production Principles to Malaysian Construction Industry. *Proceedings of 5th*

Madon, Z. (2005). *The Understanding of Contract Documentation in Project Implementation.* Masters Degree, Universiti Teknologi Malaysia, Skudai.

Moser, L., and Dos Santos, A. (2003). "Exploring the Role of Visual Controls on Murman, E., et al. (2002). *Lean Enterprise Value: Insights from MIT's LeanAerospace Initiative*, Palgrave, New York.

Ong C.K. (2002). *Implementing lean principles in Malaysia Construction Industry.* Masters Degree, Universiti Teknologi Malaysia, Skudai.

Richard, F. and Anita, N. (2003). *7 Data Analysis (Second Edition)*, Hong Kong, Blackwell Science Ltd, pp. 176-180

Russell, R and Taylor,B.W. (2006), *Operations Management - 5th Edition* , John Wiley & Sons, Inc

Samsul, H.B. (2008). *Collaborative usage of ICT DBMS in Construction Cost Control: The Post Contract Perspectives.* Masters Degree, Universiti Teknologi Malaysia, Skudai.

Tan, W. (2004). *Practical Research Methods.* Singapore: Pearson Prentice Hall.

Victor Lim (2008) *Lean Construction: Knowledge And Barriers In Implementing Into Malaysia Construction Industry* Masters Degree, Universiti Teknologi Malaysia, Skudai